

DOCUMENT NUMBER: SOP601

TITLE: Capital Construction Project Closeout

PURPOSE:

Formal closeout and handoff to O&M personnel is a critical function of a project. It ensures the owner gets a well-constructed facility that will be in operation for many years to come and it is the milestone that determines when construction stops and operation and maintenance begins. The project closeout procedure describes the phases of Substantial Completion, Conditional Acceptance, Final Acceptance and handoff to Operations and Maintenance (O&M).

BACKGROUND:

This procedure applies to all capital construction projects that result in a new facility or a significant upgrade to an existing facility. It applies to [ARSLS Contractor] personnel for project closeout and turnover to facilities/systems operations group at ARSLS Headquarters, Toolik Field and Summit Stations, and other locations as required throughout the arctic region.

TERMS AND DEFINITIONS:

Commissioning

Commissioning is a systematic process of ensuring that all the building systems perform interactively according to the design intent and the Owner's operational needs.

Commissioning during/after construction of a project is intended to achieve the following specific objectives:

- Ensure applicable equipment and systems are installed, and startup is performed by the installing contractors or the equipment manufactures representative.
- Ensure all flushing and cleaning has occurred.
- Ensure all test and balance is complete.
- Verify and document proper installation and performance of equipment and systems.
- Ensure that O&M documentation left on-site is complete and accurate.
- Ensure owner's operating personnel are adequately trained.

Substantial Completion

Substantial Completion is determined by the Owner after commissioning. Substantial Completion of the Work, or a designated portion, occurs on the date when construction is sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work (the facility, modification, addition, etc.) for its intended use. The project has no life safety issues and all systems are operational. The warranty phase begins with approval of Substantial Completion.

Conditional Acceptance

Conditional Acceptance is granted when a project is Substantially Complete, commissioning has taken place and the punch list has been created with no Life-Safety issues. All major building systems (plumbing, HVAC, electrical, fire, life safety systems, DDC and IT) shall be fully functional; however, punch list items may be outstanding. Conditional Acceptance typically triggers approval of Subcontractors' payment requests, except for any retainage previously reserved for Final Completion. The contractor retains ownership of the facility until Final Acceptance.

Final Acceptance

Final Acceptance signifies the completion and submittal of all punch list items, training, documentation and handoff of ownership to the Owner. Commissioning has ensured the facility is performing as designed and that O&M personnel take control of the facility. The end user has full access to the facility and all systems and final cost and schedule data is complete. The asset has been loaded into the CMMS and maintenance operations may begin.

Authority Having Jurisdiction

The Authority Having Jurisdiction (AHJ) at Toolik is the University of Alaska – Fairbanks (UAF) Fire Marshal. The AHJ in Greenland is the NSF.

Computerized Maintenance Management System

The Computerized Maintenance Management System (CMMS) is software that organizes and tracks the maintenance performed on an asset. The [ARSLS Contractor] uses Maintenance Connection to support the ARSLS program.

RESPONSIBILITIES

Facilities, Engineering, Maintenance and Construction Manager

- Ensures the facilities group is in compliance with this procedure
- Provides written approval of Substantial Completion, Conditional Acceptance and Final Acceptance as required

Construction and Technical Services Manager

- Participates in commissioning

Project Manager (PM)

- Manages the project closeout process
- Ensures completion and accuracy of engineering and construction tasking, system testing, requests for information (RFI's), change management, closeout and supporting documentation
- Ensures final construction details are completed
- Ensures that required testing is conducted and approved

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- Ensures as-builts and O&M manuals are completed
 - Monitors equipment start up
 - Schedules Conditional Acceptance inspection with Construction Management, NSF and others as required
 - Ensures final planned versus actual budget information is complete
 - Ensures punch list items are assigned to responsible parties
 - Posts the following documents to document control:
 - RFIs
 - Submittals
 - Change Orders
 - Meeting Minutes
 - As-Builts
 - O&M Manuals
 - Punch Lists
 - Commissioning Reports
 - Lessons Learned
 - Relevant Contract Documents

Maintenance Manager

- Loads equipment into CMMS and budgets for spare parts and work orders accordingly
- Participates in training and turnover activities

Regional O&M Personnel (O&M)

- Responsible for communicating and documenting changes to as-builts and O&M manuals
- Participates in training and turnover activities

NSF

- Grants final approval on acceptance of punch list and closeout materials for major projects
- Grants Final Acceptance for new or renovated structures.

3rd Party Inspection

- When appointed, acts as the NSF's representative for inspections of the work in place and final commissioning.
- When appointed, creates the punch list with the project manager

PROCEDURE:

The closeout process includes:

- Verifying project scope, specifications, workmanship and system operation
- Receipt of

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- As built documentation and drawings
 - O&M Manuals
 - Commissioning reports
 - Testing reports
 - Letters of acceptance
 - O&M staff training
 - Entry into the CMMS system
 - Formal handoff to O&M.
 - Complete financial closure
 - Lessons learned documentation

Project closeout begins when the project nears completion and an inspection and commissioning with the Project Manager, and their representatives is scheduled. Inspectors and commissioning agents typically include the contractor and their subcontractors, the Project Manager, the NSF commissioning agent, the Construction Manager, Engineers and others as required. Note, some modularized projects are executed with the majority the work being completed at a supplier's fabrication site and the facility is subsequently shipped and installed at the final destination by [the ARSLS Contractor]. With these projects, inspection and commissioning activities occur both at the supplier's site and after final installation on site.

When the inspection and commissioning is complete and the punch list is developed and agreed upon without any life safety issues, the Project Manager, along with the Owner's team, notify the contractor that they are Substantially Complete. The PM communicates to the contractor a letter of substantial completion with the attached punch list at which time the warranty phase begins. The letter and punch list are agreed to by all parties, filed with the project documents, and copies are sent to the Owner.

Conditional Acceptance follows suit when the owner occupies and makes beneficial use of an area or facility (if the building is constructed by the contractor at the site). All major building systems (plumbing, HVAC, electrical, fire, life safety systems, DDC and IT) are fully functional however punch list items may be outstanding. A letter of Conditional Acceptance is provided to the contractor which normally triggers a payment milestone. Even though the owner may use the building, the contractor retains responsibility of the facility until Final Acceptance. The letter is signed by all parties, filed with the project documents and copies are sent to the Owner.

The last stage of facility acceptance is triggered when a final commissioning/ inspection is scheduled and performed. The PM will recommend final acceptance when the following is complete:

- The facility has been fully commissioned
- The punch list items are 100% complete and accepted
- Necessary approval by public regulatory authorities has been given (as required)
- The owner and O&M personnel have received all required warranties, training, and documentation
- The project has been transitioned from construction status to O&M status
- Final acceptance forms have been signed and accepted by the Project Manager (PM), the FEMC Manager and the National Science Foundation (NSF) or its designee.

Final acceptance allows the owner to use, operate, and maintain the project in all respects, for its intended purpose. Signed copies of the Final Acceptance forms are uploaded to the document control system by the PM.

The last stage of project closeout is the collection and organization of final documentation. The project is considered closed when the following is complete. The PM assigns appropriate personnel to complete the following steps

- O&M Manuals and training complete
- Project documents and files including RFIs, change orders, vendor information, shop drawings, subcontractor documentation, etc. are uploaded to the document control system
- As-built drawings per the As-built and CADD procedures are uploaded to the document control system and provided to maintenance personnel
- Distribution of final and fully approved documentation is complete to key stakeholders. At a minimum, the distribution includes, but is not limited to the NSF and [ARSLS Contractor]
- Lessons learned are documented and uploaded to the document control system
- Project planned versus actual data is uploaded to the document control system
- Remaining funds are reconciled with the owner

Transferring Work from Construction to Operations and Maintenance Status:

During the Annual Program Plan (APP) planning period, the Project Manager will advise Maintenance and Operations staff of the projects that will be conditionally or finally accepted in that contract year, so they can plan and budget for parts and labor accordingly.

Final Acceptance triggers a switch to Operations and Maintenance (O&M) financial responsibility. To complete the project closeout, the O&M department ensures that the following steps are completed in order to transfer the project from construction to maintenance status.

1. All capital equipment tagged with NSF property numbers
2. All equipment entered in computerized maintenance management system (Maintenance Connection)
3. Preventive Maintenance procedures are developed for all equipment, including job steps and cycles
4. Subsequent work is charged to the appropriate maintenance WBS, ending all charges to the project construction WBS